arc-light directed upon it at the same time, the lighter portions of the powder were repelled, producing an appearance closely resembling the tail of a comet. The effect was comparable with what was to be expected from the energy observed. The authors considered it possible that the phenomena might be produced in part by other causes. In any event, the experiment reproduced with great accuracy the appearances observed in the tails of comets.

This work of NICHOLS and HULL points the way to other investigations which should throw much light on the vexed question of the constitution of the comets. C. D. P.

NOTES ON THE THREE COMETS NOW VISIBLE.

Comet a 1903: The telegram announcing the discovery of a new comet by M. GIACOBINI at Nice was received at the Lick Observatory on January 20th, but continuous stormy weather prevented observations here until the evening of January 29th. As seen with the 12-inch telescope on that date, the comet appeared to be about as bright as a ninth-magnitude star. It was small, nearly round, and with only a feeble condensation. During the month of February the comet grew steadily brighter and larger, and the condensation in the coma became more sharply defined, appearing at the time of the last obsrvation as a bright disk about 2″ or 3″ in diameter. On February 15th, a faint straight tail was visible to a distance of about 5′ in the north-following quadrant. This has grown brighter and longer, being traced to a distance of more than one degree in position-angle 47° on February 25th. When last seen the comet as a whole was as bright as a 6.5-magnitude star.

Comet d 1902: Observations secured here during February show that this comet is following very closely the orbit given in No. 88 of these *Publications* (p. 27). The residuals at the date of my last observations (February 28th) were only $-0^s.6$ and $+9''$. The comet's appearance has changed very little, though it is perhaps fainter than at first. It is still measurable with the 12-inch telescope, and can probably be followed with large telescopes for a month or two more. With one exception its perihelion distance is greater than that of any other comet so far found.

Comet b 1902: PERRINE'S comet was last observed here before its perihelion passage on November 17, 1902. After passing the Sun the comet was visible only to observers in the southern hemisphere until late in January, 1903. On the 29th of January, I found the comet close to the place predicted by STRÖMGREN'S ephemeris, the observed data being:—

Jan. 29, $12^h\ 57^m\ 38^s$ Mt. Ham. M. T. $\alpha = 9^h\ 5^m\ 53^s.99$
$\delta = -41^\circ\ 0'\ 55''.7$

Since then the comet has moved rapidly north and west, passing close to *Sirius* in the latter part of February. On February 28th it was still visible in the 3-inch finder, and the 36-inch showed a faint nucleus.

Stormy weather has prevented observations of any of these comets since February 28th.

March 16, 1903. R. G. AITKEN.

ASTRONOMICAL TELEGRAMS.

(Translations.)

CAMBRIDGE, MASS., Jan. 20, 1903.

To Lick Observatory: (Received 8:30 A. M.)

A comet was discovered by GIACOBINI at Nice on January 15th. It was observed at Nice on January 19.2498 G. M. T., in R. A. $22^h\ 57^m\ 48^s.0$; Decl. $+2^\circ\ 17'\ 36''$. The daily motion is east 17′, north 12′. (Signed) E. C. PICKERING.

BOSTON, MASS., Jan. 22, 1903.

To Lick Observatory: (Received 8:30 A. M.)

Comet *a* 1903 (GIACOBINI) was observed by DINWIDDIE at Washington, on January 21 4915 G. M. T., in R. A. $23^h\ 0^m\ 6^s.5$; Decl. $+2^\circ\ 47'\ 46''$. (Signed) JOHN RITCHIE, JR.